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# Cisco UCS B22 M3 Blade Server

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## OVERVIEW

The Cisco® UCS B22 M3 Blade Server delivers a balanced price/performance feature set to address quick deployment of scalable IT infrastructure and Web 2.0 applications. The Cisco UCS B22 M3 harnesses the power of the latest Intel® Xeon® processor E5-2400 product family with expandability to 192 GB of RAM (using 16 GB DIMMs), 2 hot-plug drives, and 2 PCIe mezzanine slots for up to 80 Gbps throughput.

Figure 1 Cisco UCS B22 M3 Blade Server

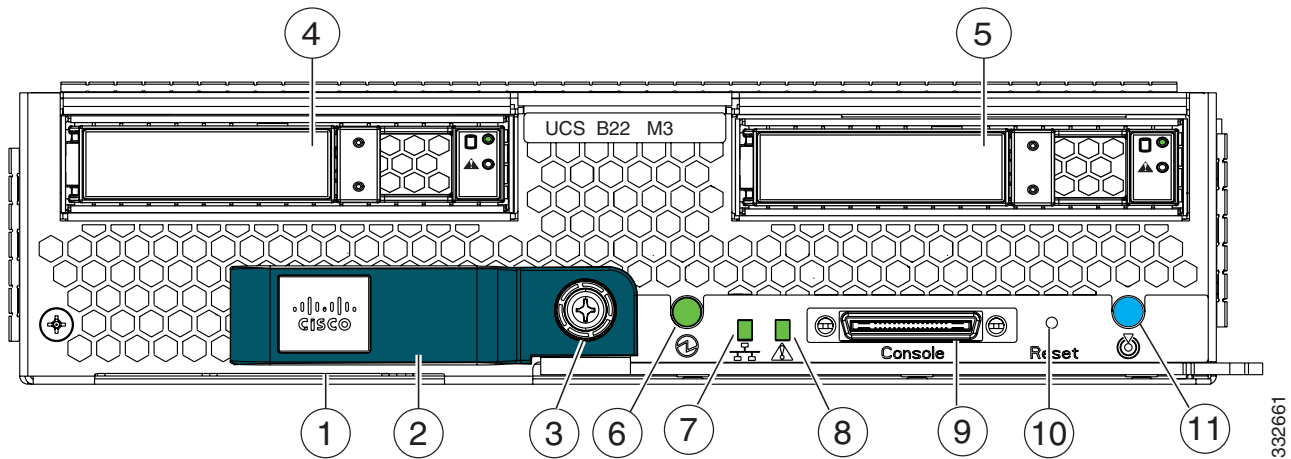


# DETAILED VIEWS

## Blade Server Front View

Figure 2 is a detailed front view of the Cisco UCS B22 M3 Blade Server.

Figure 2 Blade Server Front View



1	Asset pull handle (a blank asset tag is provided on which you can add your own label or sticker or you can use a marker to write your asset information on the tag)	7	Network link status LED
2	Blade ejector handle	8	Blade health LED
3	Ejector captive screw	9	Console connector <sup>1</sup>
4	Drive bay 1	10	Reset button access
5	Drive bay 2	11	Beaconing LED and button
6	Power button and LED	-	-

Notes

1. For information about the KVM local I/O cable that plugs into the console connector (a cable is included with every Cisco UCS 5100 Series blade server chassis accessory kit), see [ORDER OPTIONAL KVM LOCAL I/O CABLE\\*](#) on page 30.

## BASE SERVER STANDARD CAPABILITIES and FEATURES

*Table 1* lists the capabilities and features of the base server. Details about how to configure the server for a particular feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in *CONFIGURING the SERVER on page 6*.

**Table 1** Capabilities and Features



Capability/Feature	Description
Chassis	The UCS B22 M3 Blade Server mounts in a Cisco UCS 5100 series blade server chassis
CPU	One or two Intel® E5-2400 series processor family CPUs
Chipset	Intel® C600 series chipset
Memory	12 total slots for registered ECC DIMMs for up to 192 GB total memory capacity (using 16 GB DIMMs)
I/O	<p>Mezzanine cards:</p> <ul style="list-style-type: none"> <li>■ First connector for Cisco's modular LAN on motherboard (mLOM), which provides Ethernet and Fibre Channel over Ethernet (FCoE)</li> <li>■ Second connector for various types of Cisco or third-party network adapter cards</li> </ul> <hr/> <div>  <p><b>NOTE:</b> The second connector is supported only for 2-CPU system configurations.</p> </div> <hr/>
Storage controller	<p>LSI Logic SAS 2002 integrated controller</p> <ul style="list-style-type: none"> <li>■ 6 Gbs SAS/SATA support</li> <li>■ RAID 0 and 1</li> </ul> <hr/> <div>  <p><b>NOTE:</b> The integrated RAID controller does not implement a write cache. However, servers that implement two HDDs and RAID controllers with cache lack the ability to match the performance of RAID'ed SSDs without cache.</p> </div> <hr/>
Internal storage devices	<p>Up to two optional, front-accessible, hot-swappable 2.5-inch small form factor (SFF) SAS or SATA solid-state disks (SSDs) or hard disk drives (HDDs).</p> <p>An internal USB 2.0 port is also supported. A 4 GB USB 2.0 device is available from Cisco.</p>

Table 1 Capabilities and Features (*continued*)

Capability/Feature	Description
Video	<p>The Emulex Pilot 3 Integrated Baseboard Management Controller provides video:</p> <ul style="list-style-type: none"><li>■ Matrox G200e video controller</li><li>■ Integrated 2D graphics core with hardware acceleration</li><li>■ Supports all display resolutions up to 1920 x 1200 x 16 bpp resolution at 60 Hz</li><li>■ 24-bit color depth for all resolutions less than 1600x1200</li><li>■ Up to 256 MB video memory</li></ul>
Interfaces	<ul style="list-style-type: none"><li>■ Front panel<ul style="list-style-type: none"><li>• One console connector (see <a href="#">ORDER OPTIONAL KVM LOCAL I/O CABLE* on page 30</a>)</li></ul></li></ul>
Power subsystem	Integrated in the Cisco UCS 5100 series blade server chassis
Fans	Integrated in the Cisco UCS 5100 series blade server chassis
Integrated management processor	The built-in Cisco Integrated Management Controller (CIMC) GUI or CLI interface enables you to monitor the server inventory, health, and system event logs.

## CONFIGURING the SERVER

Follow these steps to configure the Cisco UCS B22 M3 Blade Server:

- *STEP 1 VERIFY SERVER SKU, page 7*
- *STEP 2 CHOOSE CPU(S), page 8*
- *STEP 3 CHOOSE MEMORY, page 10*
- *STEP 4 CHOOSE HARD DISK DRIVES or SOLID STATE DRIVES (OPTIONAL), page 13*
- *STEP 5 CHOOSE MODULAR LOM and/or PCIe MEZZANINE CARDS, page 15*
- *STEP 6 ORDER A TRUSTED PLATFORM MODULE, page 18*
- *STEP 7 ORDER CISCO FLEXIBLE FLASH SECURE DIGITAL CARDS, page 19*
- *STEP 8 ORDER OPTIONAL INTERNAL USB 2.0 DRIVE, page 20*
- *STEP 9 CHOOSE OPERATING SYSTEM, page 21*
- *STEP 10 CHOOSE OPERATING SYSTEM MEDIA KIT, page 24*
- *STEP 11 CHOOSE OPTIONAL VALUE-ADDED SOFTWARE, page 25*
- *STEP 12 CHOOSE SERVICE and SUPPORT LEVEL, page 26*

## STEP 1 VERIFY SERVER SKU

Verify the product ID (PID) of the server as shown in [Table 2](#).

Table 2 PID of the Base UCS B22 M3 Blade Server

Product ID (PID)	Description
UCSB-B22-M3	UCS B22 M3 Blade Server without CPU, memory, HDD, or mLOM/mezzanine cards

The base Cisco UCS B22 M3 blade server does not include the following components. They are to be selected during product ordering:

- CPU(s)
- Memory
- Disk drives
- VIC 1240 modular LAN-on-Motherboard (mLOM) card
- Mezzanine card



**NOTE:** Use the steps on the following pages to order the UCS B22 M3 server with the configurable components that you want configured.

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## STEP 2 CHOOSE CPU(S)

The standard CPU features are:

- Intel Xeon processor E5-2400 series family CPUs
- Intel C600 series chipset
- Cache sizes of 10, 15, or 20 MB

### Select CPUs

The supported Intel Xeon E5-2400 series family CPUs on the UCS B22 M3 are listed in [Table 3](#).

**Table 3 Supported Intel CPUs: E5-2400 Series Processor Family CPUs**

Product ID (PID)	Intel Number	Clock Freq (GHz)	Power (W)	Cache Size (MB)	Cores	QPI	Highest DDR3 DIMM Clock Support (MHz) <sup>1</sup>
UCS-CPU-E5-2470	E5-2470	2.30	95	20	8	8 GT/s	1600
UCS-CPU-E5-2450	E5-2450	2.10	95	20	8	8 GT/s	1600
UCS-CPU-E5-2440	E5-2440	2.40	95	15	6	7.2 GT/s	1333
UCS-CPU-E5-2430L	E5-2430L	2.00	60	15	6	6.4 GT/s	1333
UCS-CPU-E5-2420	E5-2420	1.90	95	15	6	7.2 GT/s	1333
UCS-CPU-E5-2403	E5-2403	1.80	80	10	4	6.4 GT/s	1066

#### Notes

1. If higher or lower speed DIMMs are selected than what is shown in the table for a given CPU, the DIMMs will be clocked at the lowest common denominator of CPU clock and DIMM clock. For example:

Selecting lower-speed DIMMs: If you use an E4-2470 CPU (which can support up to 1600-MHz DIMMs) with 1333-MHz DIMMs, the DIMMs will be clocked at the lower speed of 1333 MHz.

Selecting higher-speed DIMMs: If you use 1600-MHz DIMMs with an E5-2420 CPU (which can support up to 1333-MHz DIMMs), the DIMMs will be clocked at the lower speed of 1333 MHz.

### Supported Configurations

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#### (1) 1-CPU Configuration

- Choose one CPU from any one of the rows of [Table 3 on page 8](#).

#### (2) Two-CPU Configuration

- Choose two identical CPUs from any one of the rows of [Table 3 on page 8](#).

### Caveats

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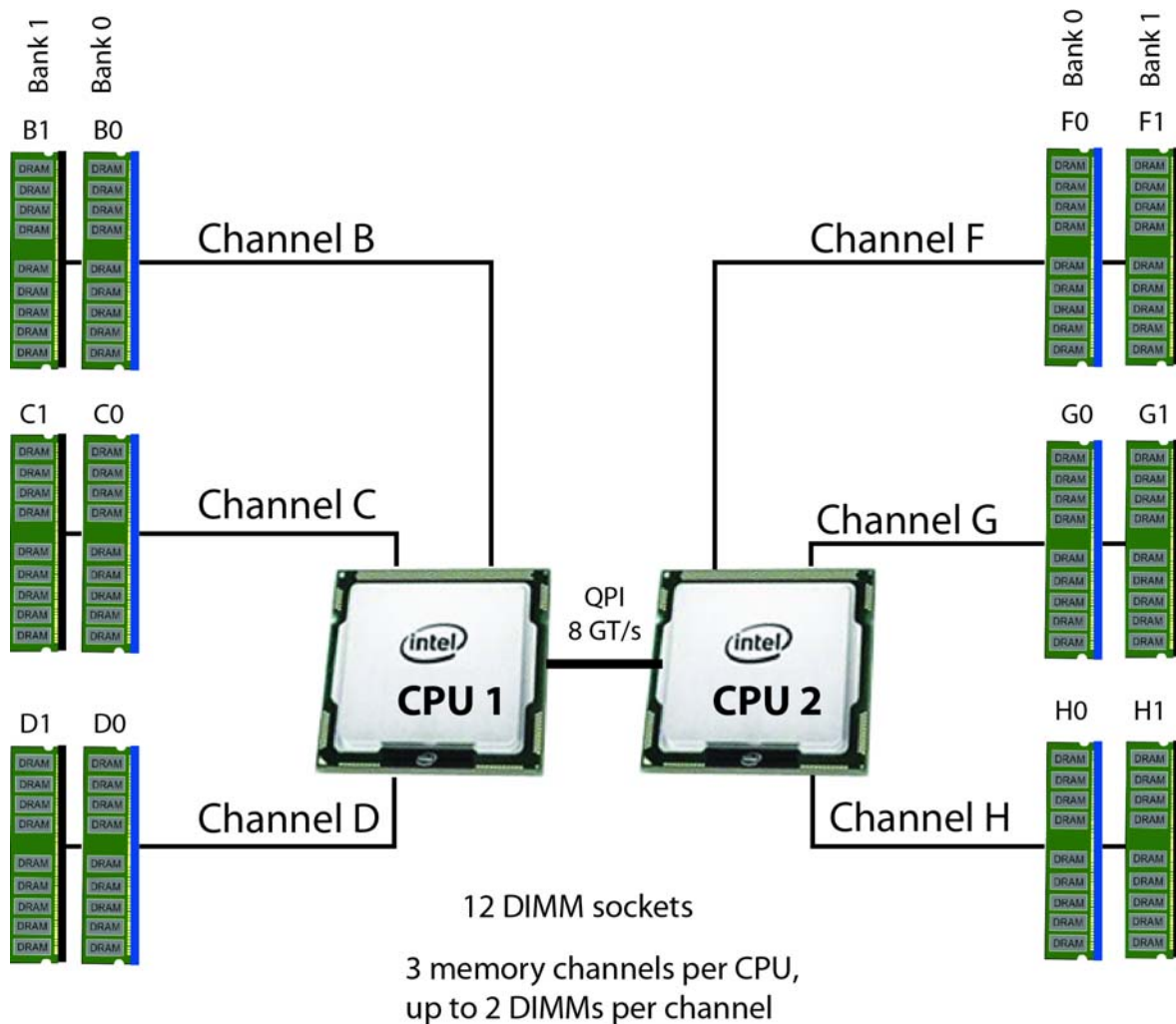
- The VIC 1240 card is supported for 1- or 2-CPU configurations.
- Mezzanine cards are supported only for 2-CPU configurations.

## STEP 3 CHOOSE MEMORY

The standard memory features are:

- DIMMs
  - Clock speed: 1600 MHz
  - Ranks per DIMM: 1 or 2
  - Operational voltage: dual (1.5 or 1.35 V)
  - Registered
- DDR3 ECC registered DIMMs (RDIMMs)
- Memory is organized with three memory channels per CPU, with up to two DIMMs per channel (DPC), as shown in [Figure 3](#). Maximum memory capacity is 192 GB (with 16 GB DIMMs).

Figure 3 UCS B22 M3 Memory Organization



## Choose DIMMs and Memory Mirroring

Select the memory configuration and whether or not you want the memory mirroring option. The supported memory DIMMs and the mirroring option are listed in [Table 4](#).



**NOTE:** When memory mirroring is enabled, the memory subsystem simultaneously writes identical data to two adjacent channels. If a memory read from one of the channels returns incorrect data due to an uncorrectable memory error, the system automatically retrieves the data from the other channel. A transient or soft error in one channel does not affect the mirrored data, and operation continues unless there is a simultaneous error in exactly the same location on a DIMM and its mirrored DIMM. Memory mirroring reduces the amount of memory available to the operating system by 50% because only one of the two populated channels provides data.

The supported memory DIMMs in the UCS B22 M3 are listed in [Table 4](#).

**Table 4 Supported DDR3 DIMMs and Memory Mirroring Option**

Product ID (PID)	PID Description	Voltage	Ranks /DIMM
<b>DIMM Options</b>			
UCS-MR-1X162RY-A	16GB DDR3-1600-MHz RDIMM/PC3-12800/2R/x4/1.35v/35nm	1.35/1.5 V	2
UCS-MR-1X082RY-A	8GB DDR3-1600-MHz RDIMM/PC3-12800/2R/x4/1.35v/35nm	1.35/1.5 V	2
UCS-MR-1X041RY-A	4GB DDR3-1600-MHz RDIMM/PC3-12800/1R/x4/1.35v/35nm	1.35/1.5 V	1
<b>Memory Mirroring Option</b>			
N01-MMIRROR	Memory mirroring option		

## Supported Configurations

### (1) Without memory mirroring:

- Select from 1 to 6 DIMMs per CPU (note that there are 6 DIMM slots per CPU)

### (2) With memory mirroring:

- Select 2 or 4 DIMMs per CPU. The DIMMs must be identical across channels for the same banks. The DIMMs will be placed by the factory as shown in [Table 5](#):

Table 5 DIMM Placement With Memory Mirroring

Number of DIMMs per CPU	DIMM Placement in Channels (with memory mirroring implemented). Note that Channels B and F are not used for memory mirroring	
	CPU 1	CPU 2
2	1 DIMM in Channel C (C0), 1 DIMM in Channel D (D0)	1 DIMM in Channel G (G0), 1 DIMM in Channel H (H0)
4	2 DIMMs in Channel C (C0, C1), 2 DIMMs in Channel D (D0, D1)	2 DIMMs in Channel G (G0, G1), 2 DIMMs in Channel H (H0, H1)

- Select the memory mirroring option (N01-MMIRROR) as shown in [Table 4 on page 11](#).



**NOTE:** System performance is optimized when the DIMM type and quantity are equal for both CPUs, and when all channels are filled equally across the CPUs in the server.

## Caveats

- For 2-CPU configurations, DIMMs must be even across the server (2, 4, 6 up to 12). For example, you can select four 8 GB DIMMs and six 16 GB DIMMs.
- Memory mirroring reduces the amount of available memory by 50% (quantity of DIMMs must be even for mirroring).
- By default, all DIMMs run at 1.35 V, which yields 1333-MHz memory speeds. To run the memory DIMMs at 1600 MHz, you need to go into the BIOS or set the policy with UCSM (service profile) to run in Performance Mode. This forces the DIMMs to operate at 1.5 V and yields 1600-MHz speeds provided:
  - The DIMMs are 1600-MHz devices
  - The CPUs chosen support 1600-MHz operation

For more information regarding memory, see [DIMM and CPU Layout on page 32](#) and [DIMM Population on page 34](#).

## STEP 4 CHOOSE HARD DISK DRIVES or SOLID STATE DRIVES (OPTIONAL)

The UCS B22 M3 can be ordered with or without drives. The standard disk drive features are:

- 2.5-inch small form factor
- Hot-pluggable sled mounted



**NOTE:** The UCS B22 M3 blade server meets the external storage target and switch certifications as described in the following link:

<http://www.cisco.com/en/US/docs/switches/datacenter/mds9000/interoperability/matrix/Matrix8.html#wp323852>

### Choose Drives

The supported drives in the UCS B22 M3 are listed in [Table 6](#).

**Table 6 Supported Hot-Pluggable Sled-Mounted HDDs and SSDs**

Product ID (PID)	PID Description	Drive Type	Capacity
<b>HDDs</b>			
A03-D600GA2	600 GB 6 Gb SAS 10K RPM SFF HDD	SAS	600 GB
UCS-HDD300GI2F105	300 GB 6 Gb SAS 15K RPM SFF HDD	SAS	300 GB
A03-D300GA2	300 GB 6 Gb SAS 10K RPM SFF HDD	SAS	300 GB
A03-D146GC2	146 GB 6 Gb SAS 15K RPM SFF HDD	SAS	146 GB
<b>SSDs</b>			
UCS-SD100G0KA2-E	100 GB Std Height 15mm SATA SSD	SATA	100 GB



**NOTE:** The integrated LSI 2002 MegaRAID controller supports hard disk drives (HDDs) or solid state drives (SSDs). Write cache is not implemented. SSDs are recommended for applications requiring high-speed local storage, which is an order of magnitude faster than HDDs.

### Supported Configurations

#### (1) 1-Drive System

- Select one of the drives listed in [Table 6](#).

### (1) 2-Drive System

- Select two identical drives from [Table 6](#). There is no support for mixing of drive types or capacities.

### Caveats

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- If you select two drives, they must be identical in type and capacity.

## STEP 5 CHOOSE MODULAR LOM and/or PCIe MEZZANINE CARDS

The card offerings are:

### ■ Virtual Interface Cards (VICs)

Cisco-developed Virtual Interface Cards (VICs) provide the flexibility to create multiple NIC and HBA devices. The VICs also support adapter Fabric Extender and Virtual Machine Fabric Extender (FEX) technologies.

### ■ Converged Network Adapters (CNAs)

Industry-standard Converged Network Adapters (CNAs) consolidate Ethernet and Storage (FC) traffic on the Unified Fabric by supporting FCoE.

### ■ Network Interface Cards (NICs)

Industry-standard Network Interface Cards (NICs) provide Ethernet connectivity to the server.



**NOTE:** There are two connectors on the server to accommodate mezzanine cards. One is a connector that accommodates Cisco and third-party PCIe CNA and NIC cards and one is a dedicated modular LAN-on-motherboard (mLOM) connector for the VIC 1240 card only. [Table 7](#) shows which cards plug into each of the two connectors. Only the VIC 1240 card plugs into the mLOM connector. All other cards plug into the PCIe mezzanine connector.



**NOTE:** You must have a 2-CPU system to support cards that plug into the mezzanine connector. The VIC 1240 mLOM card is supported on both 1- and 2-CPU configured systems.

### Choose a Mezzanine Option Card

The supported mezzanine cards in the UCS B22 M3 are listed in [Table 7](#).

Table 7 Supported Mezzanine Cards

Product ID (PID)	PID Description	Connector
<b>Virtual Interface Cards (VICs)</b>		
UCSB-MLOM-40G-01	Cisco UCS VIC 1240 modular LOM for M3 blade servers. Plugs into the dedicated mLOM connector only. It is the only card that can be plugged into the mLOM connector.	mLOM
UCS-VIC-M82-8P	Cisco UCS VIC 1280 dual 40 Gb capable Virtual Interface Card	PCIe



## Supported Configurations

## (1) Select One modular LOM and/or One PCIe Mezzanine Cards

Select one or two cards as desired in accordance with [Table 8](#).

Table 8 Modular LOM and Mezzanine Card Options

Fabric Extender Compatibility	Card in modular LOM Connector	Card in Mezzanine Connector (PCIe)	Ports	Reference
<b>2208XP (PIDs UCS-IOM-2208XP, UCS-IOM2208-16FET)</b>				
2208XP	VIC 1240	None	4 x 10 Gb	<a href="#">Figure 11 on page 38</a>
2208XP	VIC 1240	VIC 1280	8 x 10 Gb	<a href="#">Figure 12 on page 39</a>
2208XP	VIC 1240	3rd-party Mezzanine Card <sup>1</sup>	6 x 10 Gb	<a href="#">Figure 13 on page 39</a>
2208XP	None	3rd-party Mezzanine Card <sup>1</sup>	2 x 10 Gb	<a href="#">Figure 14 on page 40</a>
<b>2204XP (PIDs UCS-IOM-2204XP, UCS-IOM2204-8FET)</b>				
2204XP	VIC 1240	None	2 x 10 Gb	<a href="#">Figure 15 on page 41</a>
2204XP	VIC 1240	VIC 1280	4 x 10 Gb	<a href="#">Figure 16 on page 42</a>
2204XP	VIC 1240	3rd-party Mezzanine Card <sup>1</sup>	4 x 10 Gb	<a href="#">Figure 17 on page 42</a>
2204XP	None	3rd-party Mezzanine Card <sup>1</sup>	2 x 10 Gb	<a href="#">Figure 18 on page 43</a>
<b>2104XP (PID N20-I6584)</b>				
2104XP	VIC 1240	None <sup>2</sup>	2 x 10 Gb	<a href="#">Figure 19 on page 44</a>

## Notes

1. To be supported in the future
2. The 2104XP fabric extender is not compatible with any I/O card installed in the mezzanine connector.

Also see [Network Connectivity on page 35](#) for more information.

To help ensure that your operating system is compatible with the cards you have selected, please check the Hardware Compatibility List at this URL:

[http://www.cisco.com/en/US/products/ps10477/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html)

### Caveats

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- If a VIC 1240 modular LOM card is not installed, you must choose a network card to be installed in the mezzanine card slot (see also [Network Connectivity on page 35](#))
- The mezzanine cards are not supported for 1-CPU configurations. You must have two CPUs installed before you can install and use mezzanine cards.

## STEP 6 ORDER A TRUSTED PLATFORM MODULE


Trusted Platform Module (TPM) is a computer chip (microcontroller) that can securely store artifacts used to authenticate the platform (server). These artifacts can include passwords, certificates, or encryption keys. A TPM can also be used to store platform measurements that help ensure that the platform remains trustworthy. Authentication (ensuring that the platform can prove that it is what it claims to be) and attestation (a process helping to prove that a platform is trustworthy and has not been breached) are necessary steps to ensure safer computing in all environments.

The TPM ordering information is listed in [Table 9](#).

**Table 9**      Trusted Platform Module

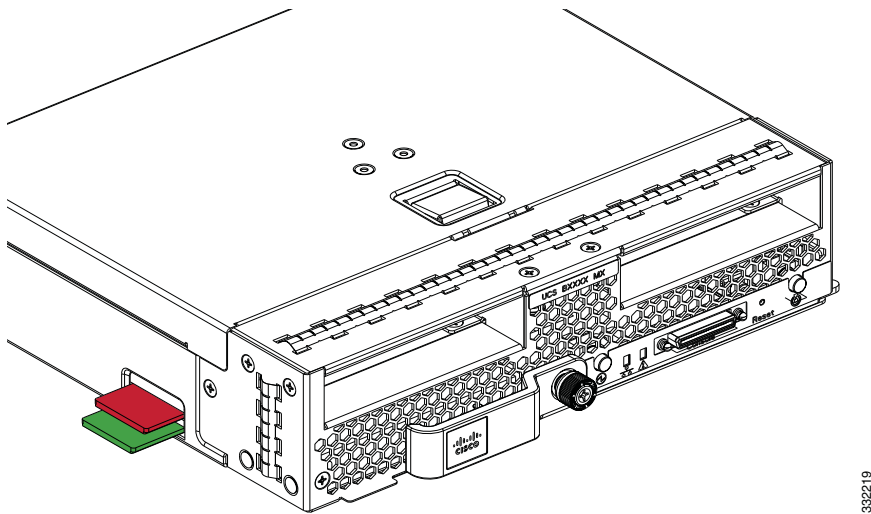
Product ID (PID)	PID Description
UCSX-TPM1-001	Trusted Platform Module for UCS

STEP 7 ORDER CISCO FLEXIBLE FLASH SECURE DIGITAL CARDS

 **NOTE:** Cisco Flexible Flash secure digital cards are currently orderable; however, they will be enabled only with future firmware and software updates.

Dual SDHC flash card sockets are provided on the front left side of the server as shown in [Figure 4](#).


Figure 4 SD Locations



The SDHC card ordering information is listed in [Table 10](#).

Table 10 Cisco Flexible Flash Secure Digital Cards

Product ID (PID)	PID Description
UCS-SD-16G	16 GB SD Card module for UCS Servers

 **NOTE:** The SD card transfer rates are:

- Sequential reads: 23 MB/s
- Sequential writes: 20 MB/s

Future Supported Configurations

- (1) Select one or two Cisco Flexible Flash secure digital card

## STEP 8 ORDER OPTIONAL INTERNAL USB 2.0 DRIVE

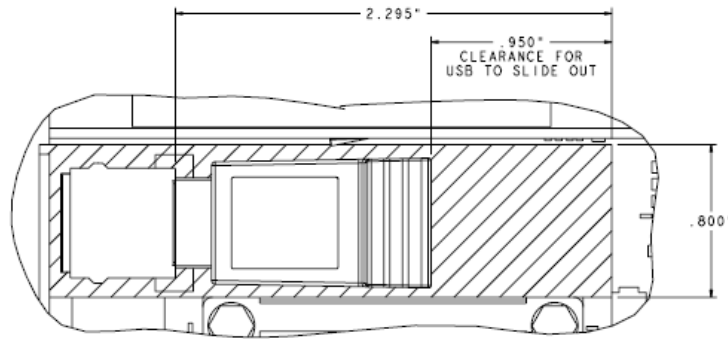
You may order one optional internal USB 2.0 drive. The USB drive ordering information is listed in [Table 11](#).

Table 11 USB 2.0 Drive

Product ID (PID)	PID Description
UCS-USBFLSH-S-4GB	4GB Flash USB Drive (shorter length) for all servers except C260



**NOTE:** A clearance of 0.950 inches (24.1 mm) is required for the USB device to be inserted and removed (see the following figure).



See [Figure 6 on page 31](#) for the location of the USB connector.



**NOTE:** When the Cisco 4GB USB key is purchased with a server, it is pre-installed into the internal USB port and held firmly in place with a clip to protect it from shock and vibration during shipment and transportation. This clip also prevents the USB key from undergoing shock and vibration during ongoing customer operational use.

## STEP 9 CHOOSE OPERATING SYSTEM

Several operating systems are available from which to choose. Choose one of the operating systems listed in [Table 12](#).

Table 12 Operating Systems

PID Description	Product ID (PID)
<b>SUSE Linux Enterprise Server</b>	
SLES-1A	SLES/1yr subscription/svcs required/0 media
SLES-3A	SLES/3yr subscription/svcs required/0 media
<b>Red Hat Enterprise Linux</b>	
RHEL-2S-1G-1A	RHEL/2 Socket/1 Guest/1Yr Svcs Required
RHEL-2S-1G-3A	RHEL/2 Socket/1 Guest/3Yr Svcs Required
RHEL-2S-4G-1A	RHEL/2 Socket/4 Guest/1Yr Svcs Required
RHEL-2S-4G-3A	RHEL/2 Socket/4 Guest/3Yr Svcs Required
RHEL-2S-UG-1A	RHEL/2 Socket/U Guest/1Yr Svcs Required
RHEL-2S-UG-3A	RHEL/2 Socket/U Guest/3Yr Svcs Required
RHEL-2S-1G-1A-RS	RHEL/2 Socket/1 Guest/1Yr Subscription/Redhat Svcs Included
RHEL-2S-1G-3A-RS	RHEL/2 Socket/1 Guest/3Yr Subscription/Redhat Svcs Included
RHEL-2S-4G-1A-RS	RHEL/2 Socket/4 Guest/1Yr Subscription/Redhat Svcs Included
RHEL-2S-4G-3A-RS	RHEL/2 Socket/4 Guest/3Yr Subscription/Redhat Svcs Included
RHEL-2S-UG-1A-RS	RHEL/2 Socket/U Guest/1Yr Subscription/Redhat Svcs Included
RHEL-2S-UG-3A-RS	RHEL/2 Socket/U Guest/3Yr Subscription/Redhat Svcs Included
<b>RHEL Add-Ons</b>	
RHEL-HA-2S-1A	RHEL Option/High-Availability/2 Socket/1Yr Svcs Required
RHEL-RS-2S-1A	RHEL Option/Resilient w/Ha /2 Socket/1 Yr Svcs Required
RHEL-SFS-2S-1A	RHEL Option/Scalable File System/2 Socket/1 Yr Svcs Required
RHEL-HA-2S-3A	RHEL Option/High-Availability/2 Socket/3Yr Svcs Required
RHEL-RS-2S-3A	RHEL Option/Resilient Storage w/ HA /2 Socket/3 Yr Svcs Req'd
RHEL-SFS-2S-3A	RHEL Option/Scalable File System/2 Socket/3 Yr Svcs Required
RHEL-HA-2S-1A-RS	RHEL Option/High-Availability/2 Socket/1Yr Redhat Svcs Incl'd
RHEL-RS-2S-1A-RS	RHEL Option/Resilient Storage/2 Socket/1 Yr Redhat Svcs Incl'd

Table 12 Operating Systems *(continued)*

PID Description	Product ID (PID)
RHEL-SFS-2S-1A-RS	RHEL Option/Scalable File Sys/2 Socket/1 Yr Redhat Svcs Incl
RHEL-HA-2S-3A-RS	RHEL Option/High-Availability/2 Socket/3Yr Redhat Svcs Incl
RHEL-RS-2S-3A-RS	RHEL Option/Resilient Storage/2 Socket/3 Yr Redhat Svcs Incl
RHEL-SFS-2S-3A-RS	RHEL Option/Scalable File Sys/2 Socket/3 Yr Redhat Svcs Incl
<b>Windows Server</b>	
MSWS-08-STHV	Windows Svr 2008 ST media (1-4CPU, 5CAL)
MSWS-08-ENHV	Windows Svr 2008 EN media (1-8CPU, 25CAL)
MSWS-08R2-STHV	Windows Svr 2008 ST media R2 ST (1-4CPU, 5CAL)
MSWS-08R2-ENHV	Windows Svr 2008 EN media R2 EN (1-8CPU, 25CAL)
MSWS-08R2-DCHV2S	Windows Svr 2008 R2-2 CPU-Data Center
MSWS-08R2-DCHV4S	Windows Svr 2008 R2-4 CPU-Data Center
<b>VMware Server</b>	
VMW-VS5-STD-1A	VMware vSphere 5 Standard for 1 Processor, 1 Year, Support Required
VMW-VS5-STD-2A	VMware vSphere 5 Standard for 1 Processor, 2 Year, Support Required
VMW-VS5-STD-3A	VMware vSphere 5 Standard for 1 Processor, 3 Year, Support Required
VMW-VS5-STD-4A	VMware vSphere 5 Standard for 1 Processor, 4 Year, Support Required
VMW-VS5-STD-5A	VMware vSphere 5 Standard for 1 Processor, 5 Year, Support Required
VMW-VS5-ENT-1A	VMware vSphere 5 Enterprise for 1 Processor, 1 Year Support Required
VMW-VS5-ENT-2A	VMware vSphere 5 Enterprise for 1 CPU, 2 Yr Support Required
VMW-VS5-ENT-3A	VMware vSphere 5 Enterprise for 1 CPU, 3 Yr Support Required
VMW-VS5-ENT-4A	VMware vSphere 5 Enterprise for 1 Processor, 4 Year Support Required
VMW-VS5-ENT-5A	VMware vSphere 5 Enterprise for 1 CPU, 5 Yr Support Required
VMW-VS5-ENTP-1A	VMware vSphere 5 Enterprise Plus for 1 Processor, 1 Year, Support Required
VMW-VS5-ENTP-2A	VMware vSphere 5 Enterprise Plus for 1 CPU, 2 Yr Support Required
VMW-VS5-ENTP-3A	VMware vSphere 5 Enterprise Plus for 1 Processor, 3 Year, Support Required
VMW-VS5-ENTP-4A	VMware vSphere 5 Enterprise Plus for 1 Processor, 4 Year Support Required
VMW-VS5-ENTP-5A	VMware vSphere 5 Enterprise Plus for 1 Processor, 5 Year, Support Required
VMW-VC5-ST-1A	VMware vCenter 5 Standard for 1 Processor, 1 Year, Support Required
VMW-VC5-ST-2A	VMware vCenter 5 Standard for 1 Processor, 2 Year, Support Required

Table 12    Operating Systems *(continued)*

PID Description	Product ID (PID)
VMW-VC5-ST-3A	VMware vCenter 5 Standard for 1 Processor, 3 Year, Support Required
VMW-VC5-ST-4A	VMware vCenter 5 Standard for 1 Processor, 4 Year, Support Required
VMW-VC5-ST-5A	VMware vCenter 5 Standard for 1 Processor, 5 Year, Support Required



**NOTE:** For additional information, see OS/hypervisor support matrix at the following link:

[http://www.cisco.com/en/US/products/ps10477/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/ps10477/prod_technical_reference_list.html)

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## STEP 10 CHOOSE OPERATING SYSTEM MEDIA KIT

Choose the optional operating system media listed in [Table 13](#).

Table 13 OS Media

Product ID (PID)	PID Description
RHEL-6	RHEL 6 Recovery Media Only (Multilingual)
SLES-11	SLES 11 media only (multilingual)
MSWS-08R2-STHV-RM	Windows Svr 2008 R2 ST (1-4CPU, 5CAL), Media
MSWS-08RS-ENHV-RM	Windows Svr 2008 R2 EN (1-8CPU, 25CAL), Media
MSWS-08R2-DCHV-RM	Windows Svr 2008 R2 DC (1-8CPU, 25CAL), Media

## STEP 11 CHOOSE OPTIONAL VALUE-ADDED SOFTWARE

You can select from a variety of value-added software listed in [Table 13.s](#)

Table 14 Value Added Software

Product ID (PID)	PID Description
N1K-CSK9-UCS-404	Cisco Nexus 1000V VSM Virtual Appliance Software
BMC-012	BMC BPPM Per Server
BMC-SE-4C	BMC BladeLogic Standard Edition, 4 Cores, Support Required
BMC-SE-6C	BMC BladeLogic Standard Edition, 6 Cores, Support Required
BMC-SE-8C	BMC BladeLogic Standard Edition, 8 Cores, Support Required
BMC-SE-10C	BMC BladeLogic Standard Edition, 10 Cores, Support Required
BMC-AE-4C	BMC BladeLogic Advanced Edition, 4 Cores, Support Required
BMC-AE-6C	BMC BladeLogic Advanced Edition, 6 Cores, Support Required
BMC-AE-8C	BMC BladeLogic Advanced Edition, 8 Cores, Support Required
BMC-AE-10C	BMC BladeLogic Advanced Edition, 10 Cores, Support Required

## STEP 12 CHOOSE SERVICE and SUPPORT LEVEL

A variety of service options are available, as described in this section.

### Unified Computing Warranty, No Contract

If you have noncritical implementations and choose to have no service contract, the following coverage is supplied:

- Three-year parts coverage.
- Next business day (NBD) parts replacement eight hours a day, five days a week.
- 90-day software warranty on media.
- Downloads of BIOS, drivers, and firmware updates.
- UCSM updates for systems with Unified Computing System Manager. These updates include minor enhancements and bug fixes that are designed to maintain the compliance of UCSM with published specifications, release notes, and industry standards.

### Unified Computing Support Service

For support of the entire Unified Computing System, Cisco offers the Cisco Unified Computing Support Service. This service provides expert software and hardware support to help sustain performance and high availability of the unified computing environment. Access to Cisco Technical Assistance Center (TAC) is provided around the clock, from anywhere in the world.

For UCS blade servers, there is Smart Call Home, which provides proactive, embedded diagnostics and real-time alerts. For systems that include Unified Computing System Manager, the support service includes downloads of UCSM upgrades. The Unified Computing Support Service includes flexible hardware replacement options, including replacement in as little as two hours. There is also access to Cisco's extensive online technical resources to help maintain optimal efficiency and uptime of the unified computing environment. You can choose a desired service listed in [Table 15](#).

**Table 15 UCS Computing Support Service**

Product ID (PID)	On Site?	Description
CON-UCS1-B22-M3	No	UC Support 8X5XNBD
CON-UCS2-B22-M3	No	UC Support 8X5X4
CON-UCS3-B22-M3	No	UC Support 24x7x4
CON-UCS4-B22-M3	No	UC Support 24x7x2
CON-UCS5-B22-M3	Yes	UC Support 8X5XNBD
CON-UCS6-B22-M3	Yes	UC Support 8X5X4
CON-UCS7-B22-M3	Yes	UC Support 24x7x4
CON-UCS8-B22-M3	Yes	UC Support 24x7x2

### Unified Computing Warranty Plus Service

For faster parts replacement than is provided with the standard Cisco Unified Computing System warranty, Cisco offers the Cisco Unified Computing Warranty Plus Service. You can choose from several levels of advanced parts replacement coverage, including onsite parts replacement in as little as two hours. Warranty Plus provides remote access any time to Cisco support professionals who can determine if a return materials authorization (RMA) is required. You can choose a service listed in [Table 16](#).

**Table 16** UCS Computing Warranty Plus Service

Product ID (PID)	On Site?	Description
CON-UCW2-B22-M3	No	UC Warranty Plus 8x5x4
CON-UCW3-B22-M3	No	UC Warranty Plus 24x7x4
CON-UCW4-B22-M3	No	UC Warranty Plus 24x7x2
CON-UCW5-B22-M3	Yes	UC Warranty Plus 8X5XNBD
CON-UCW6-B22-M3	Yes	UC Warranty Plus 8X5X4
CON-UCW7-B22-M3	Yes	UC Warranty Plus 24x7x4
CON-UCW8-B22-M3	Yes	UC Warranty Plus 24x7x2

### Unified Computing Drive Retention Service

With the Cisco Unified Computing Drive Retention (UCDR) service, you can obtain a new disk drive in exchange for a faulty drive without returning the faulty drive. In exchange for a Cisco replacement drive, you provide a signed Certificate of Destruction (CoD) confirming that the drive has been removed from the system listed, is no longer in service, and has been destroyed.

Sophisticated data recovery techniques have made classified, proprietary, and confidential information vulnerable, even on malfunctioning disk drives. The UCDR service enables you to retain your drives and ensures that the sensitive data on those drives is not compromised, thereby reducing the risk of any potential liabilities. This service also enables you to comply with regulatory, local, and federal requirements.

If your company has a need to control confidential, classified, sensitive, or proprietary data, you might want to consider one of the Drive Retention Services listed in [Table 17](#).



**NOTE:** Cisco does not offer a certified drive destruction service as part of this service.

Table 17 Drive Retention Service Options

Service Description	Service Program Name	Service Level GSP	Service Level	Product ID (PID)
UCS Mission Critical Support Service With Drive Retention	UC CRIT DR	UCMD7	24x7x4 Onsite	CON-UCMD7-B22-M3SFF
		UCMD8	24x7x2 Onsite	CON-UCMD8-B22-M3SFF
UCS Support Service With Drive Retention	UC SUPP DR	UCSD1	8x5xNBD	CON-UCSD1-B22-M3SFF
		UCSD2	8x5x4	CON-UCSD2-B22-M3SFF
		UCSD3	24x7x4	CON-UCSD3-B22-M3SFF
		UCSD4	24x7x2	CON-UCSD4-B22-M3SFF
		UCSD5	8x5xNBD Onsite	CON-UCSD5-B22-M3SFF
		UCSD6	8x5x4 Onsite	CON-UCSD6-B22-M3SFF
		UCSD7	24x7x4 Onsite	CON-UCSD7-B22-M3SFF
		UCSD8	24x7x2 Onsite	CON-UCSD8-B22-M3SFF
UCS Warranty Plus With Drive Retention	UC PLUS DR	UCWD2	8x5x4	CON-UCWD2-B22-M3SFF
		UCWD3	24x7x4	CON-UCWD3-B22-M3SFF
		UCWD4	24x7x2	CON-UCWD4-B22-M3SFF
		UCWD5	8x5xNBD Onsite	CON-UCWD5-B22-M3SFF
		UCWD6	8x5x4 Onsite	CON-UCWD6-B22-M3SFF
		UCWD7	24x7x4 Onsite	CON-UCWD7-B22-M3SFF
		UCWD8	24x7x2 Onsite	CON-UCWD8-B22-M3SFF

### Mission Critical Support Service

This service delivers personalized technical account management, expedited technical support, and expert field support engineering for the Cisco Unified Computing System (UCS).

The Mission Critical Support Service provides a designated technical account manager (TAM) who acts as a strategic resource to help ensure that the unified computing environment runs at peak efficiency. If a problem arises that threatens business continuity, the TAM provides crisis management leadership, and your IT staff receives expedited access to Cisco's Technical Assistance Center (TAC).

Mission Critical Support Service is a layered service available for all Cisco data center products already support by a UCS Support Service or SMARTnet service contract. For further information

about Cisco Mission Critical Support Service, please consult the Service Description that can be found at the following link:

[http://www.cisco.com/web/about/doing\\_business/legal/service\\_descriptions/index.html](http://www.cisco.com/web/about/doing_business/legal/service_descriptions/index.html)

or contact your Cisco account Manager.

For more service and support information, see the following URL:

[http://www.cisco.com/en/US/services/ps2961/ps10312/ps10321/Cisco\\_UC\\_Warranty\\_Support\\_DS.pdf](http://www.cisco.com/en/US/services/ps2961/ps10312/ps10321/Cisco_UC_Warranty_Support_DS.pdf)

For a complete listing of available services for Cisco Unified Computing System, see this URL:

[http://www.cisco.com/en/US/products/ps10312/serv\\_group\\_home.html](http://www.cisco.com/en/US/products/ps10312/serv_group_home.html)

ORDER OPTIONAL KVM LOCAL I/O CABLE\*

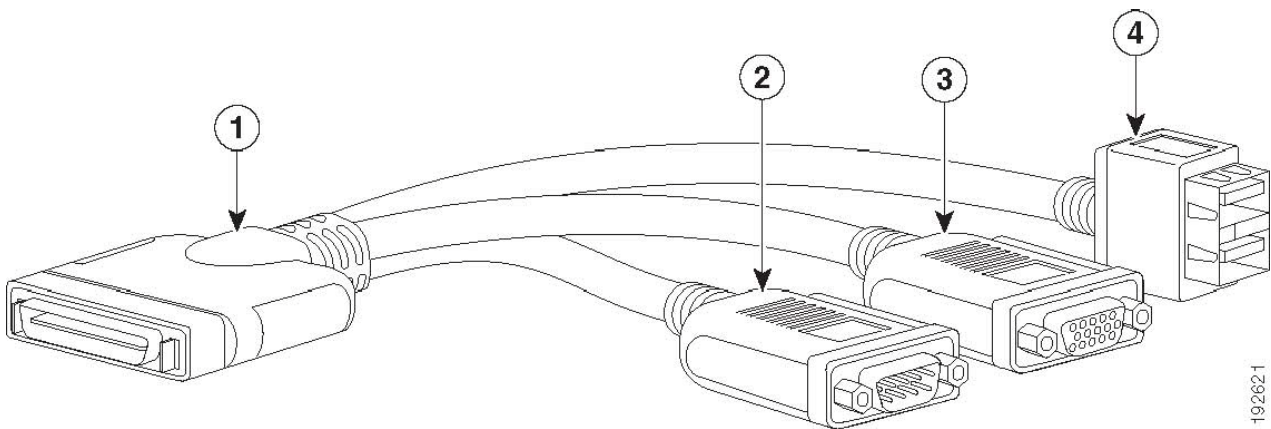
The KVM local I/O cable ships with every UCS 5100 Series blade server chassis accessory kit. The KVM local I/O cable provides a connection into the server, providing a DB9 serial connector, a VGA connector for a monitor, and dual USB ports for a keyboard and mouse. With this cable, you can create a direct connection to the operating system and the BIOS running on the server.

The KVM local I/O cable ordering information is listed in [Table 18](#).

Table 18 KVM Local I/O Cable

Product ID (PID)	PID Description
N20-BKVM=	KVM local IO cable for UCS servers console port

Figure 5 KVM Local I/O Cable



1	Connector (to server front panel)	3	VGA connector (for a monitor)
2	DB-9 serial connector	4	Two-port USB connector (for a mouse and keyboard)



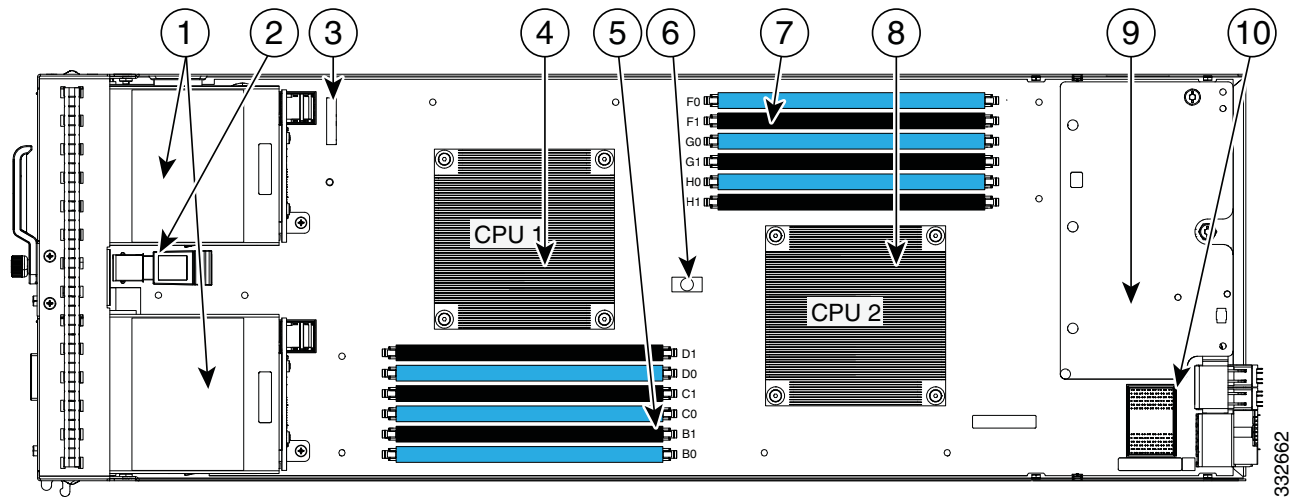
NOTE: \*The blade chassis ships with the KVM local I/O cable.

# SUPPLEMENTAL MATERIAL

## System Board

A top view of the UCS B22 M3 system board is shown in *Figure 6*.

Figure 6 UCS B22 M3 System Board



1	Drive bays	6	Diagnostic button
2	Internal USB connector <sup>1</sup>	7	CPU 2 DIMM slots
3	Battery	8	CPU 2 and heat sink
4	CPU 1 and heat sink	9	Modular LOM (shown installed)
5	CPU 1 DIMM slots	10	Mezzanine card connector (card not shown)

Notes

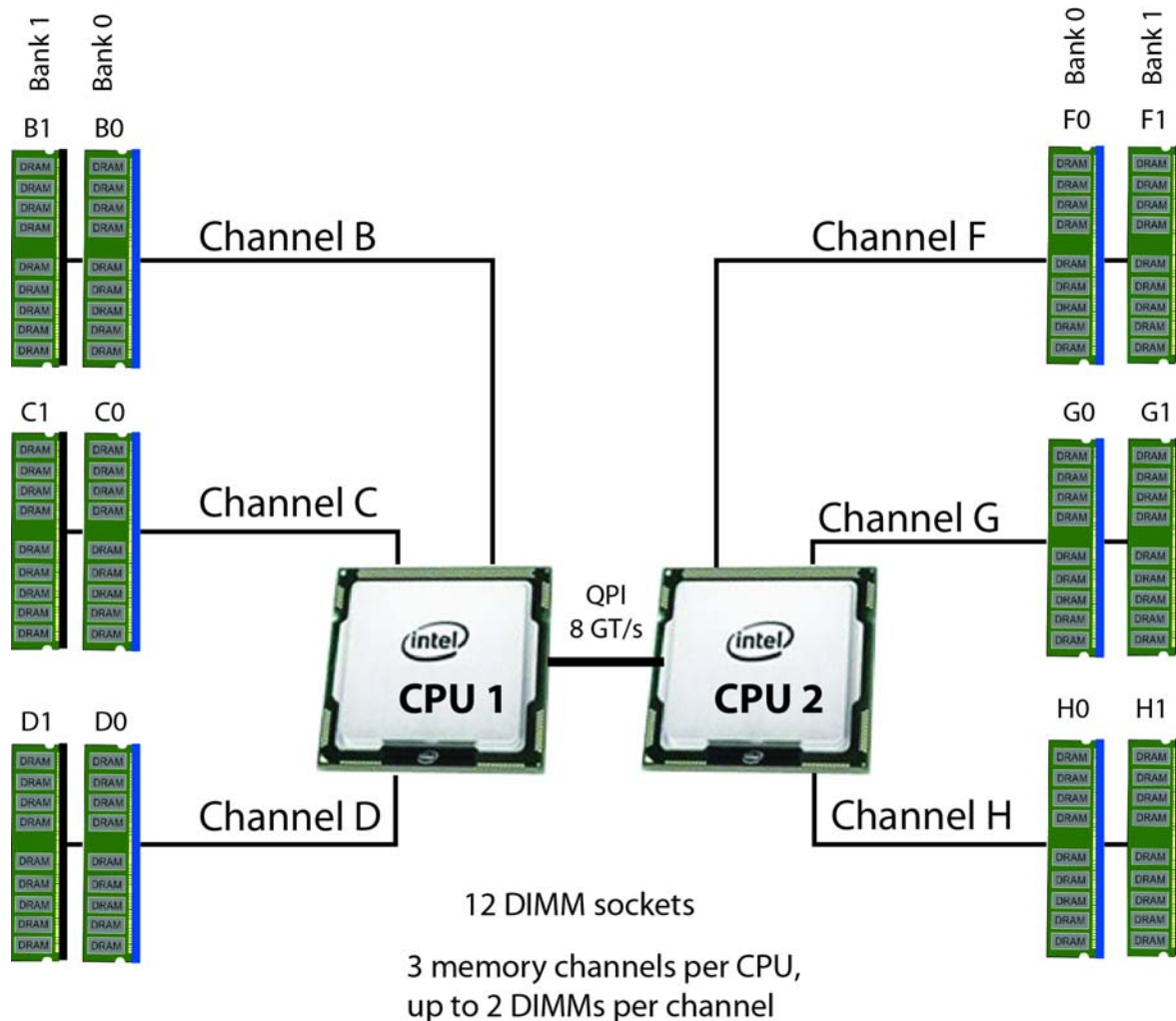
1. A USB device installed in this connector must have sufficient clearance to easily slide in and out. The Cisco USB device clearance is 0.950 inches (24.1 mm), which is a sufficient amount of clearance.



## DIMM and CPU Layout

Memory is organized as shown in [Figure 7](#).

Figure 7 UCS B22 M3 Memory Organization

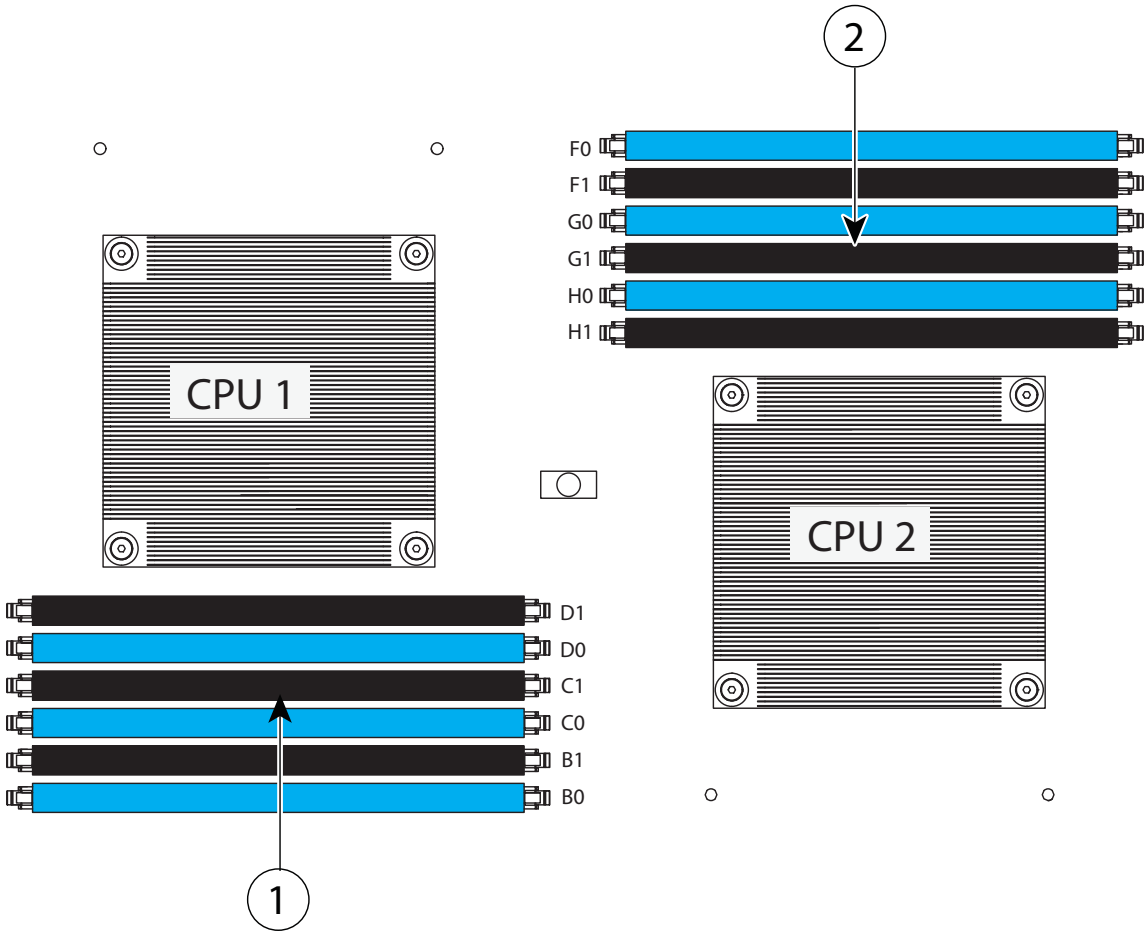


Each CPU controls three memory channels, as follows:

- CPU1: Channels B, C, and D
  - Bank 0 - B0, C0, and D0 (blue DIMM slots)
  - Bank 1 - B1, C1, and D1 (black DIMM slots)
- CPU2: Channels F, G, and H
  - Bank 0 - F0, G0, and H0 (blue DIMM slots)
  - Bank 1 - F1, G1, and H1 (black DIMM slots)

The DIMM and CPU physical layout is shown in [Figure 8](#). The 6 DIMM slots at the left are controlled by CPU 1 and the 6 DIMM slots on the right are controlled by CPU 2.

Figure 8 DIMM and CPU Layout



1	Channels B-D for CPU 1	2	Channels F-H for CPU 2
---	------------------------	---	------------------------

## DIMM Population

### Recommended DIMM Populations

[Table 19](#) shows the recommended DIMM slot populations.

Table 19 Recommended DIMM Population

DIMMs per Channel	DIMMs in Each Channel	1-CPU Memory Size	2-CPU Memory Size	DIMM Speed
1	8 GB	24	48	1600 MHz
	16 GB	48	96	1600 MHz
2	4 GB + 4 GB	24	48	1600 MHz
	8 GB + 8 GB	48	96	1600 MHz
	16 GB + 16 GB	96	192	1600 MHz
	4 GB + 8 GB	36	72	1600 MHz
	4 GB + 16 GB	60 GB	120 GB	1600 MHz
	8 GB + 16 GB	72 GB	144 GB	1600 MHz

If 4 GB DIMMs are mixed with 8 GB or 16 GB DIMMs, the DIMM slots are populated as shown in [Table 20](#).

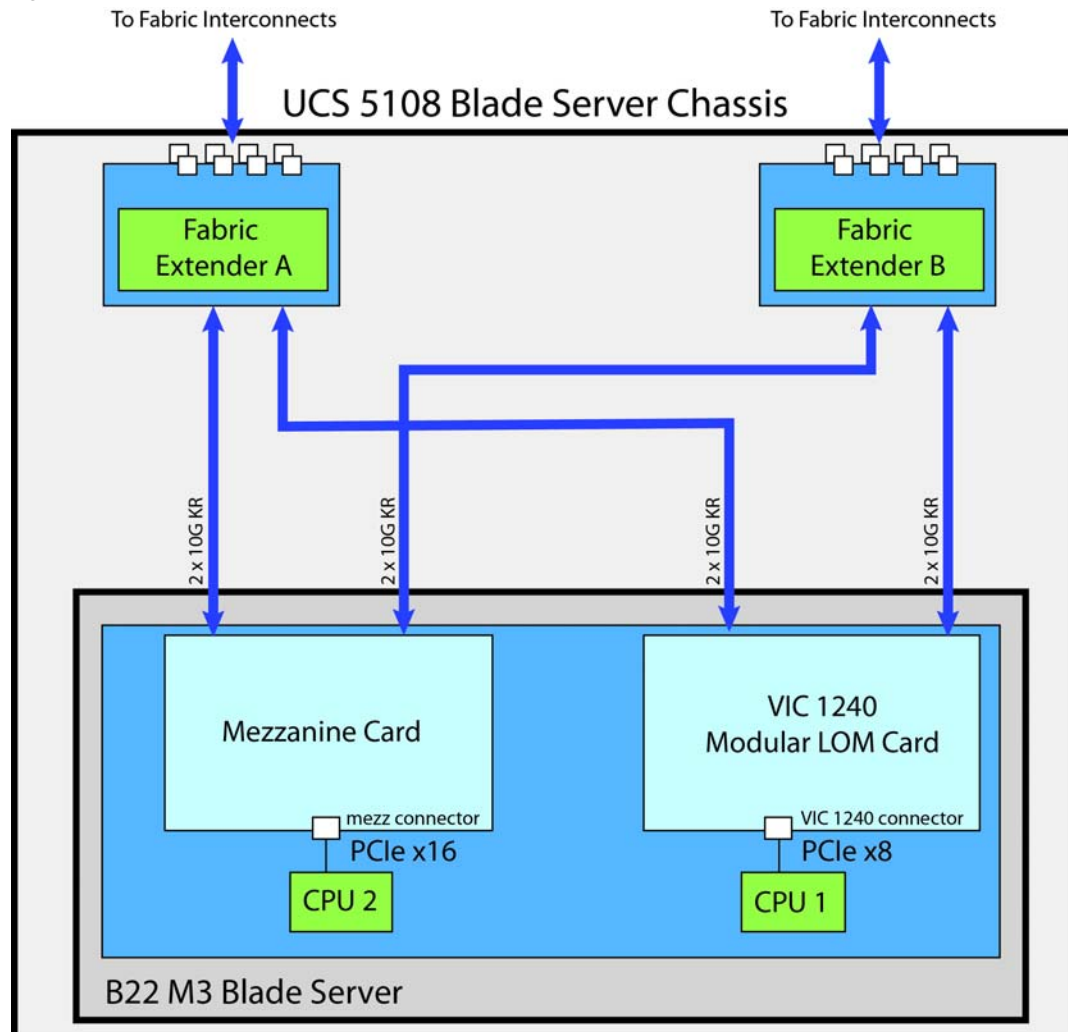
Table 20 4 GB DIMMs Mixed with 8 GB or 16 GB DIMMs

Total Memory (GB)	Number of CPUs	CPU 1 DIMM Size (GB) Populated						CPU 2 DIMM Size (GB) Populated					
		B0	B1	C0	C1	D0	D1	F0	F1	G0	G1	H0	H1
12/20	1	4	8/16	none	none	none	none	none	none	none	none	none	none
24/40		4	4	8/16	8/16	none	none	none	none	none	none	none	none
20/28		4	4	4	4	none	none	none	none	none	none	none	none
16		4	4	4	4	none	none	none	none	none	none	none	none
32/48		4	4	4	4	8/16	8/16	none	none	none	none	none	none
28/36		4	4	4	4	4	8/16	none	none	none	none	none	none
24/40	2	4	8/16	none	none	none	none	4	8/16	none	none	none	none
48/80		4	4	8/16	8/16	none	none	4	4	8/16	8/16	none	none
40/56		4	4	4	8/16	none	none	4	4	4	8/16	none	none
32		4	4	4	4	none	none	4	4	4	4	none	none
64/96		4	4	4	4	8/16	8/16	4	4	4	4	8/16	8/16
56/72		4	4	4	4	4	8/16	4	4	4	4	4	8/16

## Network Connectivity

This section explains how the UCS B22 M3 server connects to Fabric Interconnects using the network cards in the UCS B22 M3 blade server and the Fabric Extender modules in the UCS 5108 blade server chassis. The UCS B22 M3 server plugs into the front of the UCS 5108 blade server chassis. The Fabric Extender modules plug into the back of the UCS 5108 series blade server chassis. A midplane connects the UCS B22 M3 blade server to the Fabric Extenders. [Figure 9](#) shows an example configuration where two 2 x 10G KR ports are routed from the VIC 1240 modular LAN-on-motherboard (LOM) card to the Fabric Extender modules, and two 2 x 10G KR ports are routed from the mezzanine card to the Fabric Extender modules.

Figure 9 UCS B22 M3 Connections to the Fabric Extenders



The server accommodates two types of network cards. One is the Cisco VIC 1240 modular LAN-on-motherboard (mLOM) card. The other type is a mezzanine card. The VIC 1240 is the only card that can be used in the modular LOM connector. All other types of cards plug into the mezzanine PCIe connector.

The network card options are:

- VIC 1240 modular LOM card. This card is natively capable of 4x10Gb ports and 256 PCIe devices.
- VIC 1280 Mezzanine Card. This VIC card is capable of 4x10Gb ports in the UCS B22 M3 server, depending on the Fabric Extender chosen (see [Table 8 on page 16](#)) and 256 PCIe devices.
- Third-party Mezzanine Cards. See [Table 7 on page 15](#) for descriptions.



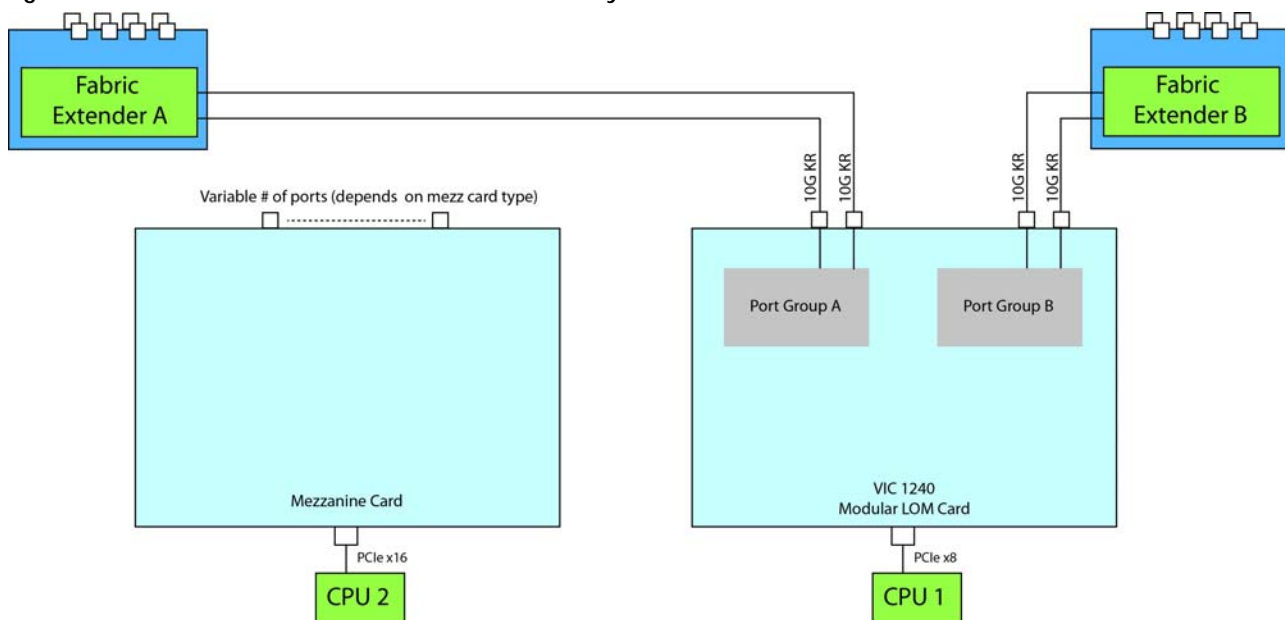
**NOTE:** The bandwidth/port count on these cards depends on the Fabric Extender. For example, the VIC 1280 only supports up to 4x10Gb in this blade because each mezzanine slot (or mLOM slot) only supports up to 4x10Gb.

## Modular LOM Card

The only card that can be plugged in to the modular LOM connector is the VIC 1240, a Cisco-designed PCIe-based card that in the UCS B22 M3 server provides up to four (depending on the Fabric Extender option chosen) 10 Gigabit Data Center Ethernet (DCE) network interfaces.

Two ports are wired through the UCS 5108 Blade Server chassis to Fabric Extender A and to Fabric Extender B as represented in [Figure 10](#).

**Figure 10** Modular LOM Card Port Connectivity



The number of ports available at the mezzanine card depend on the type of mezzanine card that is plugged into the mezzanine connector on the system board. The maximum number of ports is four. The VIC 1240 card senses the type of card plugged into the mezzanine slot.

## Mezzanine Cards

Options for the mezzanine slot include I/O-based PCIe cards (such as network adapters)



**NOTE:** In a 2-CPU configuration, if a UCS B22 M3 blade server does not have a modular LOM card installed, the mezzanine slot is required to have a network adapter installed.

---

Specific examples of mezzanine cards are:

- PCIe third-party adapters
- Cisco adapters
  - VIC 1280

The following sections explain the various I/O options that are possible with the different Fabric Extenders (Cisco UCS 2208XP, 2204XP, and 2104XP) and the modular LOM and mezzanine cards.

## Connectivity using the Cisco UCS 2208XP Fabric Extender

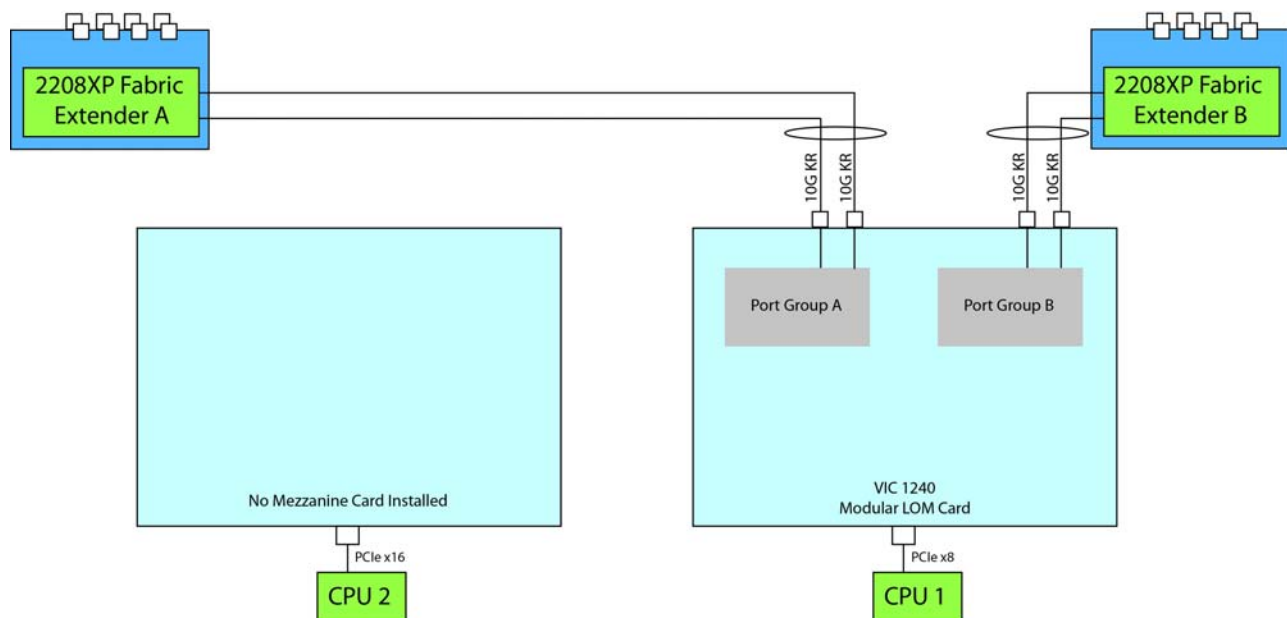
The Cisco UCS 2208XP is the second-generation Fabric Extender, and shares the same form factor as the current UCS 2100 series. The 2208XP is backwards compatible with the UCS 5108 Blade server chassis.

The options shown in [Figure 11](#) through [Figure 14](#) demonstrate how the server uses these options:

- VIC 1240 to 2208XP
- VIC 1240 and VIC 1280 to 2208XP
- VIC 1240 and PCIe 3rd party mezzanine to 2208XP

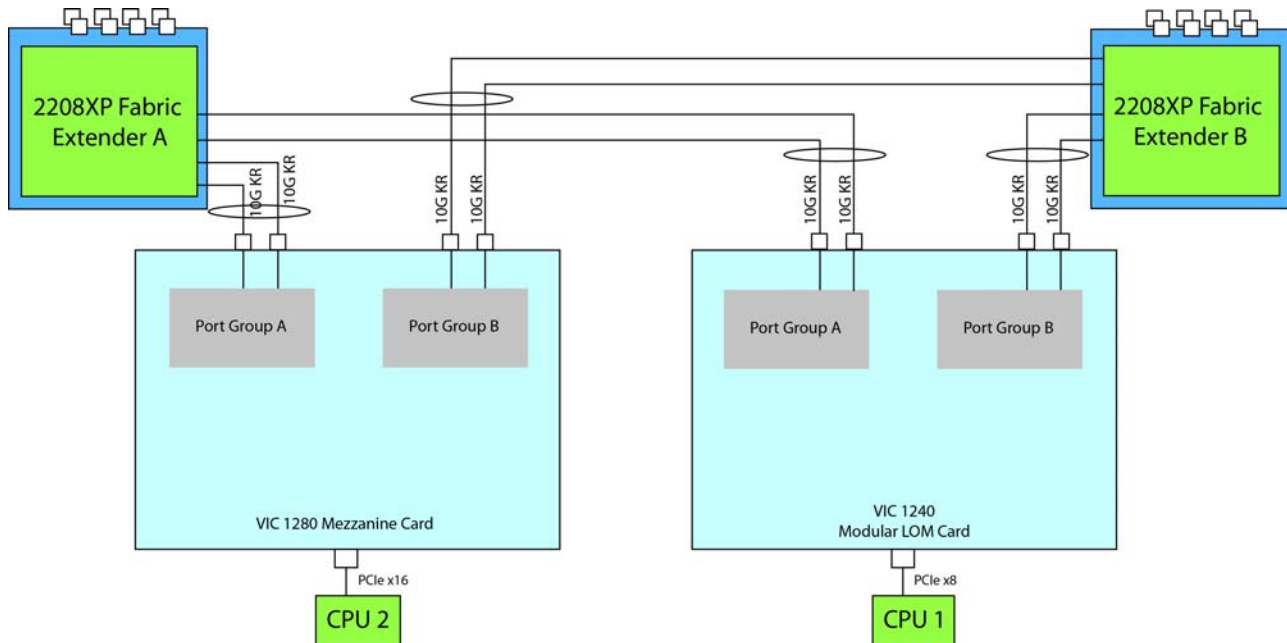
In [Figure 11](#), two ports from the VIC 1240 are channeled to 2208XP Fabric Extender A and two are channeled to 2208XP Fabric Extender B. The result is 20 Gbps of bandwidth to each Fabric Extender.

Figure 11 Option 1 - VIC 1240 to UCS 2208XP Fabric Extender (no mezzanine card)



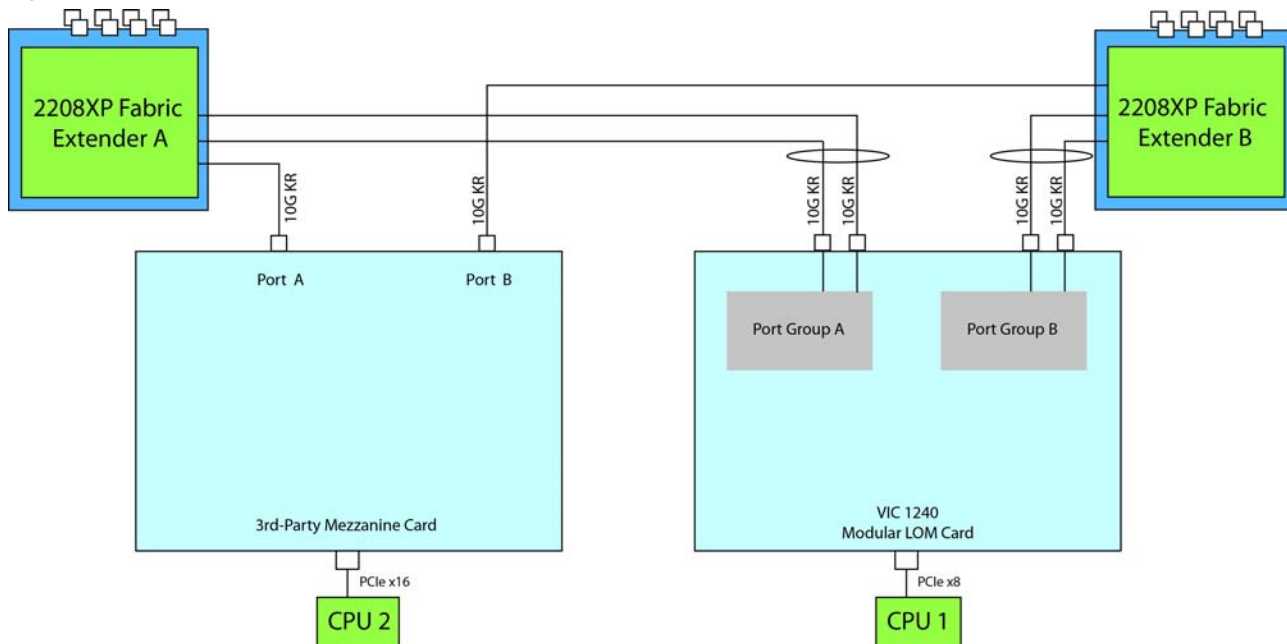
In [Figure 12](#), two ports from the VIC 1240 are channeled to 2208XP Fabric Extender A and two are channeled to 2208XP Fabric Extender B. The VIC 1280 installed in the mezzanine slot also channels two ports to each of the Fabric Extenders. The result is 40 Gbps of bandwidth to each Fabric Extender.

**Figure 12** Option 2 - VIC 1240 and VIC 1280 to UCS 2208XP Fabric Extender



In [Figure 13](#), two ports from the VIC 1240 are channeled to 2208XP Fabric Extender A and two are channeled to 2208XP Fabric Extender B. The PCIe card installed in the mezzanine slot also channels one port to each of the Fabric Extenders. The result is 30 Gbps of bandwidth to each Fabric Extender.

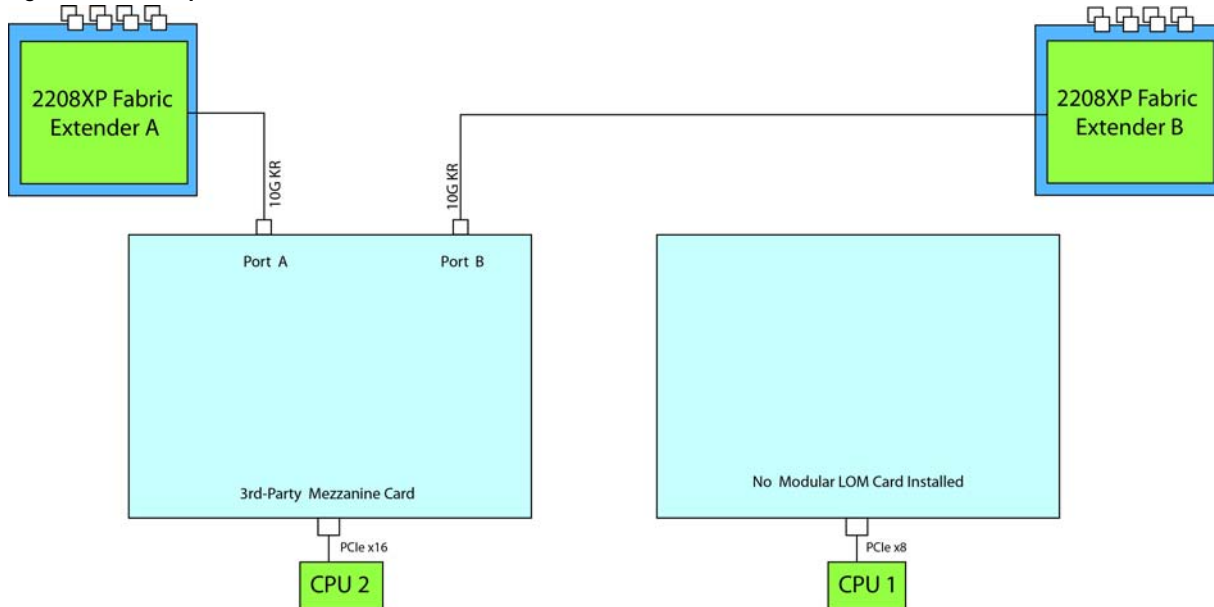
**Figure 13** Option 3 - VIC 1240 and PCIe Mezzanine Card to UCS 2208XP Fabric Extender





In [Figure 14](#), there is no modular LOM card installed. In this case, a network card must be installed in the mezzanine slot. Port A and B of the mezzanine card connect to the Fabric Extenders, providing 10 Gbps per port.

Figure 14 Option 5 - Mezzanine Card to UCS 2208XP Fabric Extender (no modular LOM card)



## Connectivity using the Cisco UCS 2204XP Fabric Extender

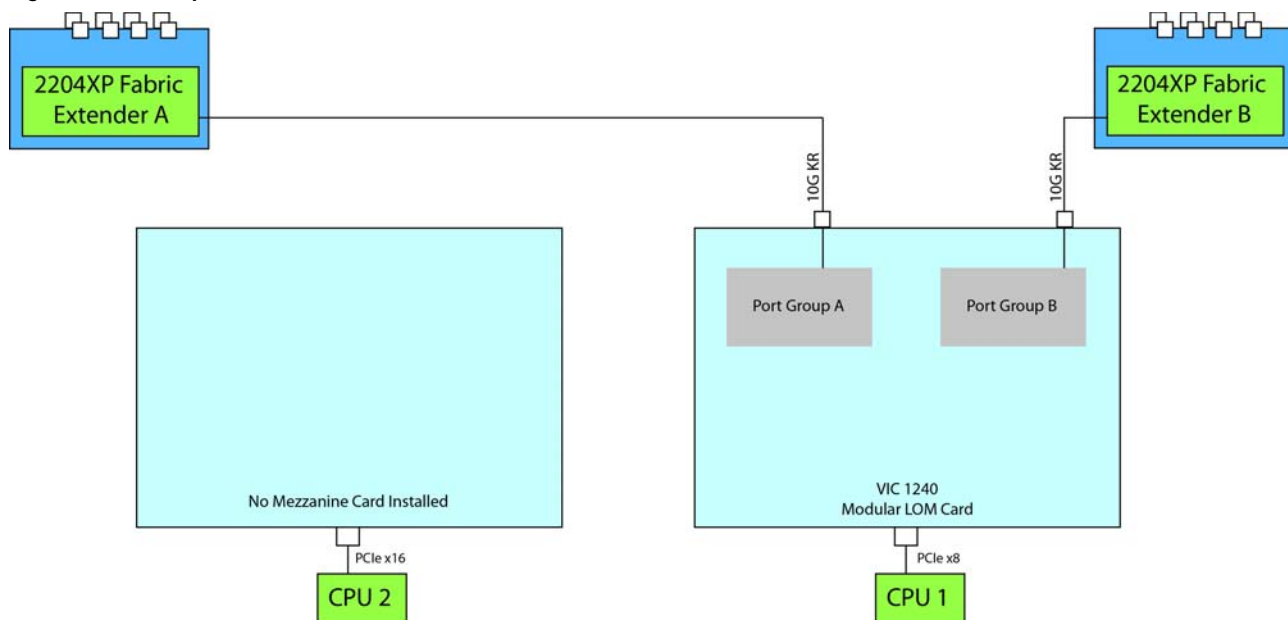
The Cisco UCS 2208XP is a second-generation Fabric Extender, and shares the same form factor as the current UCS 2100 series. The 2204XP is backwards compatible with the UCS 5108 Blade serve chassis.

The options shown in [Figure 15](#) through [Figure 18](#) demonstrate how the server uses these options:

- VIC 1240 to 2204XP
- VIC 1240 and VIC 1280 to 2204XP
- VIC 1240 and PCIe 3rd party mezzanine to 2204XP
- PCIe 3rd party mezzanine to 2208

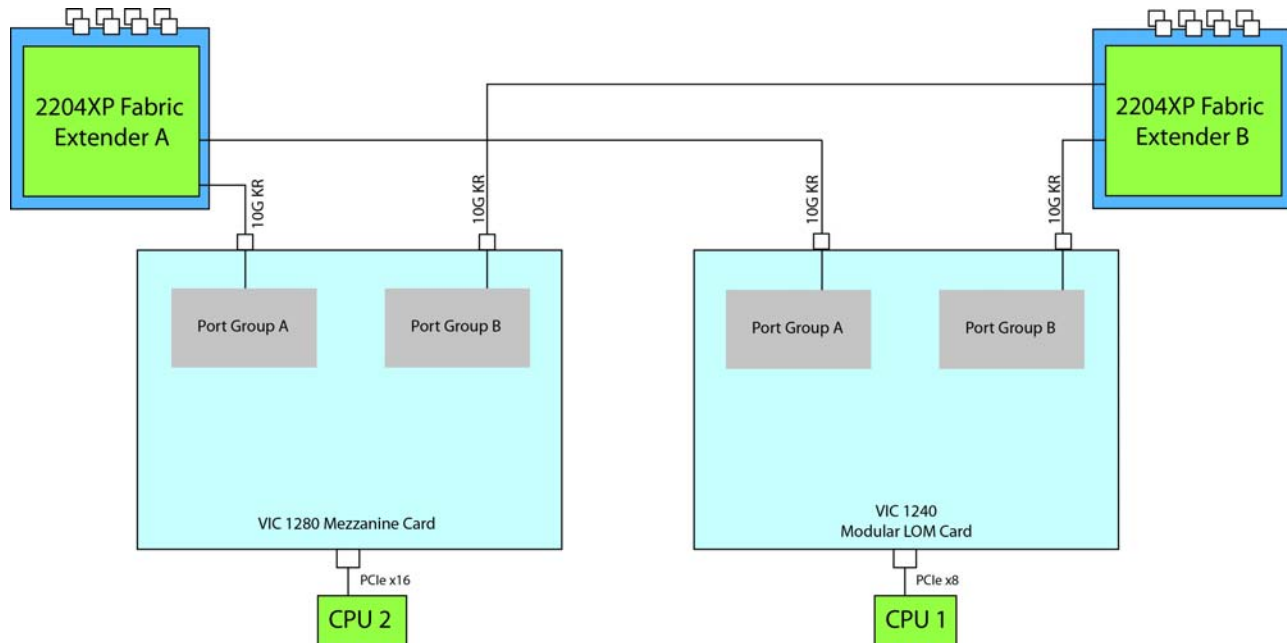
In [Figure 15](#), one port from the VIC 1240 is channelled to 2204XP Fabric Extender A and one is channelled to 2204XP Fabric Extender B. The result is 10 Gbps of bandwidth to each Fabric Extender.

Figure 15 Option 1 - VIC 1240 to UCS 2204XP Fabric Extender (no mezzanine card)



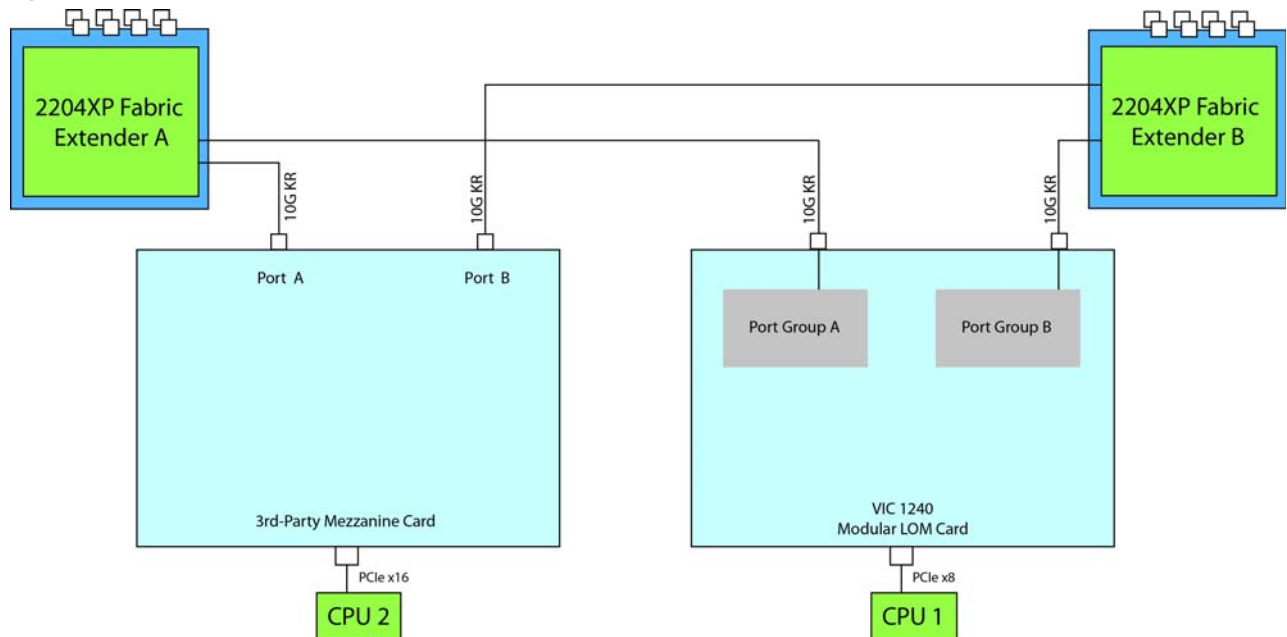
In [Figure 16](#), one port from the VIC 1240 is channelled to 2204XP Fabric Extender A and one is channelled to 2204XP Fabric Extender B. The VIC 1280 installed in the mezzanine slot also channels one port to each of the Fabric Extenders. The result is 20 Gbps of bandwidth to each Fabric Extender.

**Figure 16** Option 2 - VIC 1240 and VIC 1280 to UCS 2204XP Fabric Extender



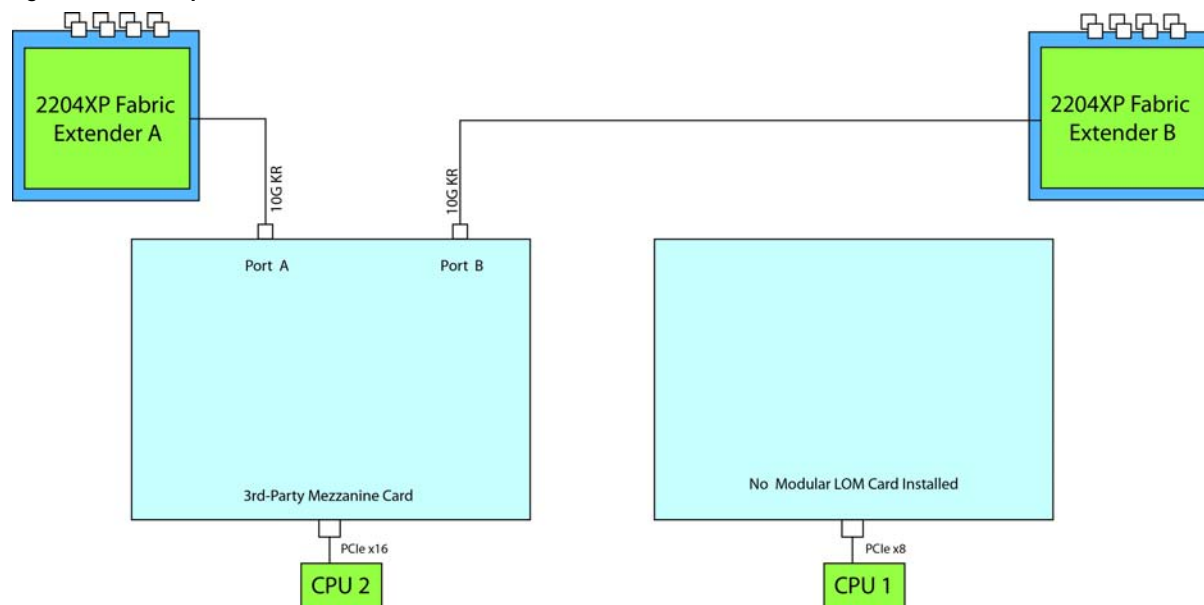
In [Figure 17](#), one port from the VIC 1240 is channelled to 2204XP Fabric Extender A and one is channelled to 2204XP Fabric Extender B. The PCIe card installed in the mezzanine slot also channels one port to each of the Fabric Extenders. The result is 20 Gbps of bandwidth to each Fabric Extender.

**Figure 17** Option 3 - VIC 1240 and PCIe Mezzanine Card to UCS 2204XP Fabric Extender



In [Figure 18](#), there is no modular LOM card installed. In this case, a network card must be installed in the mezzanine slot. Porta A and B of the mezzanine card connect to the Fabric Extenders, providing 10 Gbps per port.

Figure 18 Option 5 - Mezzanine Card to UCS 2204XP Fabric Extender (no modular LOM card)

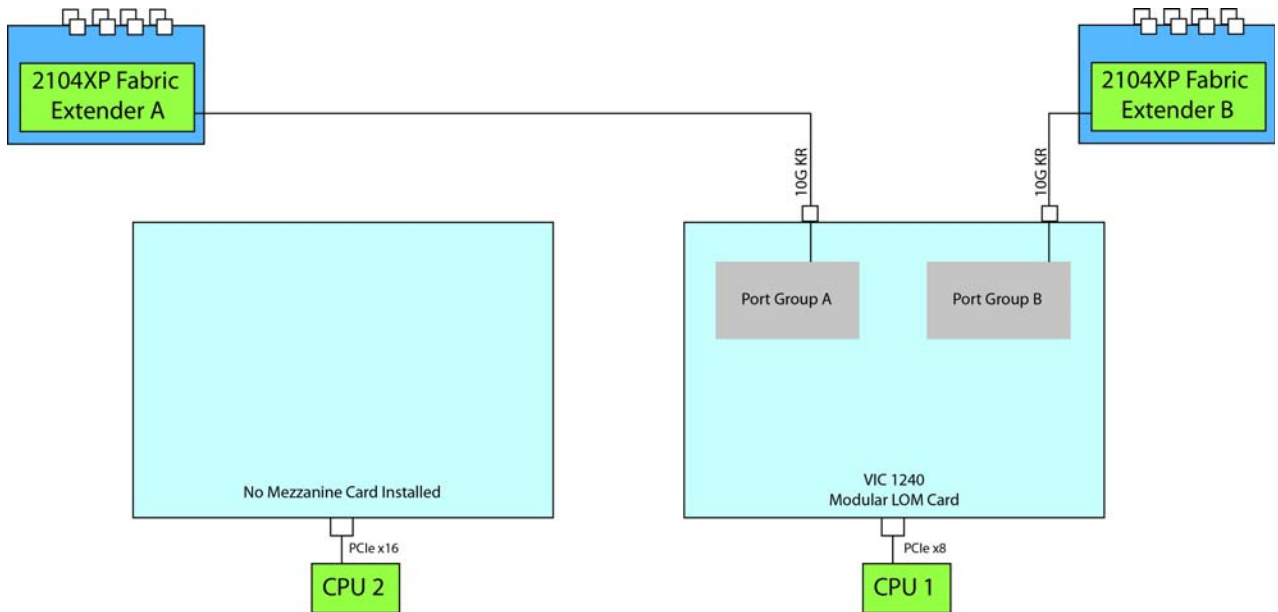


## Connectivity using the Cisco UCS 2104XP Fabric Extender

The option shown in [Figure 19](#) demonstrates how the UCS B22 M3 blade server connects to a UCS 2104XP Fabric Extender.

In [Figure 15](#), one port from the VIC 1240 is channeled to 2104XP Fabric Extender A and one is channeled to 2104XP Fabric Extender B. The result is 10 Gbps of bandwidth to each Fabric Extender.

Figure 19 Option 1 - VIC 1240 to UCS 2104XP Fabric Extender (no mezzanine card)



## TECHNICAL SPECIFICATIONS

### Dimensions and Weight

Table 21 UCS B22 M3 Dimensions and Weight

Parameter	Value
Height	1.95 in. (50 mm)
Width	8.00 in. (203 mm)
Depth	24.4 in. (620 mm)
Weight	<ul style="list-style-type: none"> <li>■ Base server weight (no HDDs, no CPUs, no mLOM, no mezzanine card, no memory) = 9.62 lbs (4.36 kg)</li> <li>■ Minimally configured server (1 HDD, 1 CPU, an mLOM card but no mezzanine cards, 1 DIMM module,) = 12.50 lbs (5.67 kg)</li> <li>■ Fully configured server (2 HDDs, 2 CPUs, mLOM and mezzanine cards both populated, all memory) = 14.98 lbs (6.79 kg)</li> </ul>

### Power Specifications

For configuration-specific power specifications, use the Cisco UCS Power Calculator at:

<https://express.salire.com/Go/Cisco/Cisco-UCS-Power-Calculator.aspx>



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